Super Light Sensitivity Feature

http://www.aiplab.com/
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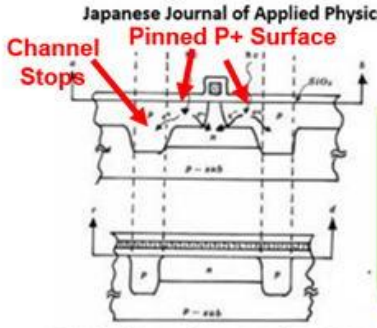
The Original First Pinned Photodiode Paper reported in SSDM1978 by Sony in 1978.

http://www.aiplab.com/Pinned_Photodiode_1978_Paper_by_Hagiwara.pdf

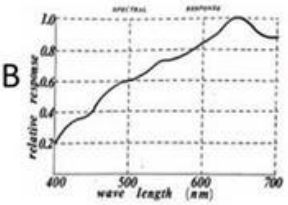
Yoshiaki Daimon-Hagiwara, Motoaki Abe, Chikao Okada,
"A 380H x 488V CCD Imager with Narrow Channel Transfer Gates"
Proceeding of the 10th Conference on Solid State Devices, Tokyo 1978;
Japanese Journal of Applied Physics, Vol 18 (1979) Supplement 18-1,pp.335-340



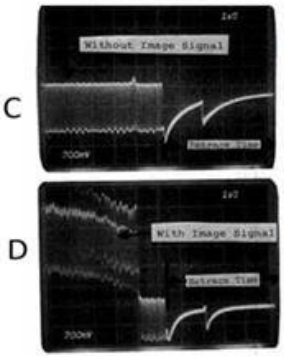
The First Pinned Photodiode (1978)

Then, using the polysilicon patterning as an ion implantation mask, boron ions with the dose level of 2×10^{13} cm^{-2} are implanted into the silicon substrate throughout the exposed portions of the thermally grown oxide. This step provides self-aligned channel stops which surround the narrow-channel transfer part of each electrode.

Fig. 2. Top and cross sectional views of the electrode for two phase CCD structure.



(1) Very High Blue Light Sensitivity



(2) No surface Dark Current

(3) No Image Lag with Complete Charge Transfer

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The surface P layer was formed by heavily doped ion implantation

of 2 times 10 to the 13 th power boron ions per cm square,

so that this surface P layer would be pinned always and

never be depleted of

the surface majority carrier hole accumulation layer.